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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,162	07/03/2001	Amit Anil Nanavati	JP920010141US1	2569

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EXAMINER

NGUYEN, STEVEN H D

ART UNIT PAPER NUMBER

2616

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/898,162

Applicant(s)

NANAVATI ET AL.

Examiner

Steven HD Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/05/06 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Salonidis et al. (USP 6,865,371) in view of Johansson et al (US 20020044549), and further in view of Shah (IEEE).

Regarding claims 1, 8 and 15, Salonidis teaches assigning master (fig. 5; col. 12 lines 11-16) or slave status (fig.5; col.11 lines 53 and col. 12 lines 7-10) to each node and connecting slave nodes to master nodes to form subgroups (piconet) based on defined optimization parameters comprising any of an amount of neighbor nodes of each node (col. 4 lines 44-46 and col. 12 lines 29-31). However, Salonidis fails to disclose fully a method and system for interconnecting said subgroups to form a single cluster either by connecting a slave node at the boundary of one subgroup to the master of an adjacent subgroup where possible or by connecting two adjacent master nodes together or by converting a slave node to at the boundary to a master and linking it to the slave nodes or master nodes in the adjacent subgroups. In the same field of endeavor, Johansson discloses a method and system for optimal clustering of master-slave ad-hoc wireless network comprising interconnecting said subgroups to form a single cluster either by connecting a slave node at the boundary of one subgroup to the master of an adjacent subgroup where possible (slave 720 in piconet 1 to the master M2 in piconet 2 in fig. 7), or by connecting two adjacent master nodes together (Master M2 in piconet 2 to the master M3 in piconet 3 in fig. 7) or by converting a slave node (M4 was a slave in piconet 2 but master in TS1) to at the boundary to a master and linking it to the slave nodes or master nodes in the adjacent subgroups (M4 to M2). Since, Johansson suggests a well-known method with centralized mechanism for forming a maximum Connectivity Scatternet (subgroup) has been used ([0068]) and Salonidis suggests the piconets coupled by the bridge node to form a

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scatternet. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to implement a method and system for interconnecting the piconets into a scatternet by using the nodes as taught by Johansson in order to interconnect the piconets into the teaching of Salonidis. However, Johansson and Salonidis differs from the claimed invention in that the modified assembly does not specifically teach that the defined optimization parameters further comprising a power consumption of the node and overhead maintenance. In the same field of endeavor, Shah discloses a method and system for forming nodes into the cluster by selecting a clusterhead and links the clusters by a gateway nodes by using the a plurality of criteria such as power consumption and data rate constraints, BER, path loss or other parameters “overhead maintenance” (See Pages 134-135, Sec 2, Para 1-2, Sec 4, Para 1). Since, Salonidis suggests a method and system for using the criteria of nodes when forming the scatternet. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to include power consumption of the node and overhead maintenance as the defined optimization parameters as taught by Shah in the modified assembly of Johansson and Salonidis in order to choice the node with the remaining battery power quantity data more than a predetermined value as the true parent wireless terminal, further prevents disconnecting the communication because of power down in the parent wireless terminal.

Regarding claims 2, 9 and 16, Salonidis further discloses that each node is assigned master or slave based on the degree of connectivity of said node with other unassigned nodes (col.4 lines 14-23).

Regarding claims 3, 10 and 17, Salonidis further teaches the assignment is implemented by a single entity (the “coordinator”) located either within the cluster as one of the nodes (as a “master” when one piconet is formed; col. 12 lines 7-10) or outside the cluster (outside the piconet when the coordinator assigns a node as another master to form a new piconet; col. 12 lines 11-17).

Regarding claims 4, 11 and 18, although the assembly of Johansson, Salonidis and Shah does not specifically points out that the formation of clusters and interconnection between the said clusters is based on weight associated with each node in the network where the weight of a node depends upon the number of nodes in its neighborhood, however Johansson and Salonidis both disclose the neighbor nodes inquiring ([0013] in Johansson and col. 1 lines 58-60 in Salonidis). Specifically, Johansson teaches that ad-hoc networks are dynamic, ad-hoc networking technology typically has a neighbor discovery feature. The neighbor discovery feature allows one node to find any other node within radio range with which the first node can communicate with and consequently form an ad-hoc network with ([0013]). Further more, Johansson teaches that scatternets should be formed by maximum connectivity, i.e. maximum connectivity scatternet (MCS) ([0024]). It would have been obvious for one of ordinary skill in the art to understand that the “maximum connectivity” depends on the number of neighboring nodes, for example, the nodes with the largest number of neighbors should serve as masters. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate the formation of clusters and interconnection between the said clusters based on weight associated with each node in the network where the weight of a node depends upon

the number of nodes in its neighborhood in the assembly of Johansson, Salonidis and Shah in order to identify the nodes and form efficient scatternets.

Regarding claims 5, 12 and 19, both Johansson and Salonidis further disclose that the method/system is applied to the formation of a scatternet in a Bluetooth network ([0024] in Johansson and col. 4 line 35-37 in Salonidis).

Regarding claims 6, 13 and 20, Johansson further disclose a method/system with a distributed manner at each node further comprising: assigning master or slave status to itself by each node based on the master or slave or unassigned status of all neighboring connected nodes (figs. 9A-9C and the corresponding descriptions), forming subgroups around each master node (figs. 9A-9C and the corresponding descriptions), merging said subgroups by forming slave-slave bridges (slave S2 in piconet 1 to the slave D2 in piconet 2 in fig. 7) or slave-master bridges (slave 720 in piconet 1 to the master M2 in piconet 2 in fig. 7) or master-master bridges (Master M2 in piconet 2 to the master M3 in piconet 3 in fig. 7) wherever possible based on network constraints or by forming additional masters where necessary.

Regarding claims 7, 14 and 21, both Johansson and Salonidis further disclose that the method/system is applied to the formation of a Bluetooth scatternet ([0024] from Johansson and col. 4, line 35-37 from Salonidis).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stefano Basagni (IEEE) discloses a method and system for forming a network by interconnecting the clusters using distributed clustering algorithm.

Mainak Chatterjee (IEEE) discloses a method and system for forming a network by interconnecting the clusters using On Demand Weighted clustering algorithm.

Theodoros Salonidis (IEEE) discloses a method and system for forming a network by interconnecting the piconets after constructing the piconets.

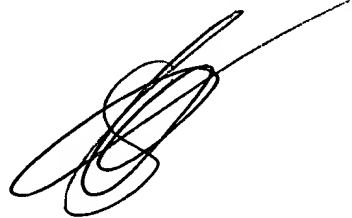
Jonsson (US 20030035350) discloses a method and system for selective service access.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven HD Nguyen whose telephone number is (571) 272-3159. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on (571) 272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Steven HD Nguyen
Primary Examiner
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June 3, 2006